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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/470,481	12/22/1999	ZHIMEI JIANG	1999-0162	6201

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05/08/2003

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EXAMINER

DEMICCO, MATTHEW R

ART UNIT	PAPER NUMBER
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2697

DATE MAILED: 05/08/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/470,481

Applicant(s)

JIANG ET AL.

Examiner

Matthew R Demicco

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 May 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-8,10,13-18 and 20-23 is/are rejected.
- 7) ☒ Claim(s) 2,9,11,12 and 19 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 December 1999 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Drawings

1. The drawings are objected to because figures 7(a) – 7(e), 9(a) – 9(e), 10(a) – 10(c) and 11(a) – 11(c) are unreadable. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

2. The disclosure is objected to because of the following informalities: on Page 5, Line 4 “11(e)” should be corrected to read –11(c) –. Further, on Page 20, Lines 25 and 26, drawing reference number “900” should be corrected to read –880– as it appears in the drawings. Also on Page 20, Line 27, drawing reference number “910” should be corrected to read –885– as it appears in the drawings. Further, on Page 24, Line 21, drawing “11(e)” should be corrected to read –11(c) –. Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 13-15 and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Horne.

Regarding Claim 13, Horne discloses a system for data packet transmission comprising a central transmission (See Figure 1) unit including a unit buffer (Elements 20 and 40) coupled to a transceiver (Element 65). A controller coupled to the buffer and transceiver is inherently disclosed, as it is a necessary element of any computerized system such as this one. The buffer stores a plurality of data packets for selective transmission by the transceiver (Col. 3, Lines 33-39). A transmission channel is disclosed that carries the plurality of data packets transmitted by the transceiver (Element 70). The unit controller controls selective transmission of the data packets from the transceiver along the transmission channel to client equipment (Element 95).

Regarding Claim 14, Horne discloses a system as stated above in Claim 13 wherein the plurality of data packets are video data packets (Col. 3, Lines 27-39).

Regarding Claim 15, Horne discloses a system as stated above in Claim 13 wherein the client equipment comprises a transceiver that receives data from the unit transceiver along the transmission path (See Figure 1, Element 75), a client smoothing buffer that stores the data packets (Elements 80 and 85), and a client data play-out mechanism that plays out the data packets from the buffer (Element 90). It is inherent in such a system that there must be a client equipment controller such as a central processing unit that is coupled to, and controls the transceiver, buffer, and play-out mechanism.

Regarding Claim 17, Horne discloses a system as stated above in Claim 13 further comprising a server that provides the plurality of data packets (See Figure 1, Element 15), a wired channel coupled to the server that carries the data packets to a wired network

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(Col. 3, Lines 36-39) to provide the packets for transmission to the client equipment. In the invention of Horne, the “server” (Video Encoder, Element 10) and the “central transmission unit” are one in the same; however, the functionality of the single device could be split into multiple devices connected by a wired channel as is well known in the art.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1, 3, 10 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,515,377 to Horne et al. in view of U.S. Patent No. 6,155,748 to Hauser et al.

Regarding Claim 1, Horne discloses a method of transmitting data packets comprising identifying a priority of each packet of a plurality of packets to be transmitted (Col. 3, Lines 36-39), receiving the transmitted packets, smoothing the received packets (Cols. 8-9, Lines 63-4) and playing-out the smoothed packets (Col. 9, Lines 4-10). What is not disclosed however is a method of selectively transmitting higher priority packets before lower priority packets by calculating a probability of higher priority packets being delivered prior to play-out times and transmitting only if this probability is greater than a set threshold. Hauser discloses a method of transmitting data packets with multiple prioritized buffer subsets wherein higher priority packets are transmitted before lower

priority packets (Col. 11, Lines 63-66). Hauser discloses calculating a link congestion counter that is compared to a specified threshold after which point only higher priority packets are transmitted (Col. 12, Lines 14-37). This threshold can be set dynamically based on traffic data in the downstream buffer (Col. 12, Lines 3-7). This reads on calculating a probability and comparing it to a set threshold to determine whether or not to transfer a lower priority packet.

Regarding Claim 3, Horne in view of Hauser disclose a method as stated above in Claim 1 wherein the step of selectively transmitting is performed based on the channel conditions of channels upon which the data are transmitted (Col. 11, Lines 63-66).

Regarding Claim 10, Horne in view of Hauser disclose a method as stated above in Claim 1. Hauser further discloses the step of selectively transmitting transmits data from the plurality of data packets in mini-slots (See Figure 10).

Regarding Claim 18, Horne discloses a system as stated above in Claim 13. Horne in view of Hauser disclose a system wherein the unit controller controls selective transmission of data by calculating a probability of higher priority packets being delivered prior to play out time as stated above in Claim 1.

7. Claims 4-6 are rejected under 35 U.S.C. 103(a) as being obvious over Horne in view of Hauser and further in view of IEEE Publication "A General Optimal Video Smoothing Algorithm," herein referenced by name of the author Jiang.

The applied reference has a common inventive entity with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35

U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). For applications filed on or after November 29, 1999, this rejection might also be overcome by showing that the subject matter of the reference and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person. See MPEP § 706.02(l)(1) and § 706.02(l)(2).

Regarding Claim 4, Horne in view of Hauser disclose a method as stated above in Claim 1. What is not disclosed, however, is that the step of smoothing the received data packets includes storing the received packets in a smoothing buffer and generating a transmission schedule which includes the rates at which the data packets will be played out. Jiang discloses a video smoothing algorithm for smoothing received data packets by storing them in a smoothing buffer (Chapter 2.1, Paragraph 1, Lines 6-8) and a transmission schedule is generated including the rates at which the data packets will be played out (Lines 8-23). Jiang is evidence that ordinary workers in the art at the time the invention was made would appreciate the use of a smoothing buffer that generates a

transmission schedule in a video broadcasting application. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the method of Horne in view of Hauser with the smoothing buffer and transmission schedule of Jiang in order to improve network efficiency and presentation quality of real-time video transmission over a network with dynamic congestion.

Regarding Claim 5, Horne in view of Hauser further in view of Jiang disclose a method as stated above in Claim 4. Jiang further discloses that the step of generating the transmission schedule is performed based on a size of a buffer that will store received packets (Chapter 2.1, Paragraph 1, Lines 8-23), available bandwidth (Lines 3-6) and allowed play-out delay (Chapter 2.2, Paragraph 2, Lines 1-4).

Regarding Claim 6, Horne in view of Hauser further in view of Jiang disclose a method as stated above in Claim 4. Jiang further discloses that the transmission schedule is designed so that the smoothing buffer does not overflow or underflow during play out of the received data packets (Chapter 2.1, Paragraph 1, Lines 8-10).

8. Claims 7-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Horne in view of Hauser and further in view of well-known prior art.

Regarding Claim 7, Horne in view of Hauser disclose a method as stated above in Claim 1. What is not disclosed, however, is that the step of selectively transmitting performs transmission over wireless channels. Official Notice is hereby taken that it is well known in the art of data transmission, including video transmission, that a wireless channel such as a satellite may be used. Therefore, it would have been obvious to one

having ordinary skill in the art at the time the invention was made to further modify the method of Horne in view of Hauser with the wireless packet transmission of the well-known prior art in order to broadcast video great distances especially where terrestrial networks do not exist.

Regarding Claim 8, Horne in view of Hauser disclose a method as stated above in Claim 1. What is not disclosed however is that the set threshold is between .7 and .9. Official Notice is hereby taken that a probability of success for transmitting a data packet that is higher than a given threshold means selecting an appropriate lower limit. This lower limit would have to be chosen such that high priority packet is always transmitted on time. Consequently the threshold would have to be such that there is a very high probability of success (such as 70%, 80% or 90%). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method of Horne in view of Hauser with an appropriate transmission threshold in order to guarantee delivery of priority packets.

9. Claims 16 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Horne in view of Jiang.

Regarding Claim 16, Horne discloses a system as stated above in Claim 15. What is not disclosed, however, is that the unit controller generates the transmission schedule based on a size of the client smoothing buffer, available transmission channel bandwidth and allowed play-out delay. Jiang discloses a system as stated above in Claim 4 with a transmission schedule based on a size of the buffer, available bandwidth, and allowed

play-out delay. Jiang is evidence that ordinary workers in the art at the time the invention was made would appreciate the use of a smoothing buffer that generates a transmission schedule in a video broadcasting application. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Horne with the smoothing buffer and transmission schedule of Jiang in order to improve network efficiency and presentation quality of real-time video transmission over a network with dynamic congestion.

Regarding Claim 21, Horne discloses a system as stated above in Claim 13. What is not disclosed, however, is that the controller generates a transmission schedule, which includes the rates at which the data packets will be played out by the client equipment. Jiang discloses the generation of a transmission schedule as stated above in Claim 4 including the rates at which the data packets will be played out by the client equipment (Chapter 2.1, Paragraph 1, Lines 14-23). Jiang is evidence that ordinary workers in the art at the time the invention was made would appreciate the use of a smoothing buffer that generates a transmission schedule in a video broadcasting application. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Horne with the smoothing buffer and transmission schedule of Jiang in order to improve network efficiency and presentation quality of real-time video transmission over a network with dynamic congestion.

10. Claims 20, 22-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Horne in view of well-known prior art.

Regarding Claim 20, Horne discloses a system as stated above in Claim 13. Horne further discloses a system wherein the unit control controls selective transmission based on the conditions of the network upon which the data packets are transmitted as stated above in Claim 3. What is not disclosed, however, is the use of a wireless channel. Official Notice is hereby taken that it is well known in the art of data transmission, including video transmission, that a wireless channel such as a satellite may be used. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Horne with the wireless packet transmission of the well-known prior art in order to broadcast video great distances especially where terrestrial networks do not exist.

Regarding Claim 22, Horne discloses a system as stated above in Claim 13. What is not disclosed however is that the set threshold is between .7 and .9. Official Notice is hereby taken that a probability of success for transmitting a data packet that is higher than a given threshold means selecting an appropriate lower limit. This lower limit would have to be chosen such that high priority packet is always transmitted on time. Consequently the threshold would have to be such that there is a very high probability of success (such as 70%, 80% or 90%). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Horne with an appropriate transmission threshold in order to guarantee delivery of priority packets.

Regarding Claim 23, Horne discloses a system as stated above in Claim 13. What is not disclosed, however, is the use of a wireless channel and a base station. Official Notice is hereby taken that it is well known in the art of data transmission, including

video transmission, that a wireless channel such as a satellite may be used with a corresponding base station. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Horne with the wireless packet transmission and base station of the well-known prior art in order to broadcast video great distances especially where terrestrial networks do not exist.

Allowable Subject Matter

11. Claims 2, 9, 11-12 and 19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding Claim 2, the Examiner found neither prior art cited in its entirety, nor based on the prior art found any motivation to combine any of the said prior art which teaches a method of transmitting high and lower priority data packets to a client side smoothing buffer where a determination is made whether sufficient time remains before a scheduled play out time of a previous not transmitted packet and, if so, transmitting the previously skipped packet.

Regarding Claim 9, the Examiner found neither prior art cited in its entirety, nor based on the prior art found any motivation to combine any of the said prior art which teaches a method of calculating a probability of a higher priority packet being delivered prior to play out time by estimating the success probability that the data packet will be delivered before its play out time.

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Regarding Claims 11-12, the Examiner found neither prior art cited in its entirety, nor based on the prior art found any motivation to combine any of the said prior art which teaches a method of calculating a probability of higher priority packets being delivered prior to play out times at the end of every mini-slot to determine whether to transmit data in a next mini slot including all of the other features recited therein.

Regarding Claim 19, the Examiner found neither prior art cited in its entirety, nor based on the prior art found any motivation to combine any of the said prior art which teaches a system for data transmission wherein the controller determines whether sufficient time remains before a scheduled play out time of a previous not transmitted packet and, if so, controls the transceiver and buffer to transmit the previous skipped packet.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- a. U.S. Patent No. 5,481,312 to Cash et al. discloses a system for transmitting video with a high and low priority stream with different probabilities of success.
- b. U.S. Patent No. 6,535,485 to Story discloses a system for detecting network congestion level and applying higher compression to transmitted data.
- c. U.S. Patent No. 6,014,694 to Aharoni et al. discloses a system for transmitting video with an adjustable compression ratio to accommodate different bandwidths.

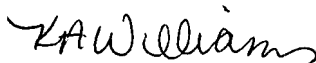
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew R Demicco whose telephone number is (703) 305-8155. The examiner can normally be reached on Mon-Fri, 9am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Faile can be reached on (703) 305-4380. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-5359 for regular communications and (703) 872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 306-0377.



mrd
May 5, 2003



Kimberly A. Williams
Primary Examiner
Technology Center 2600